ANALYSIS OF INTERNAL WATER SYSTEM IN THE CITY OF CHICAGO HEIGHTS

81-110

Prepared by:

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Population - Water Use

Chicago Heights has grown in the past 30 years from a population of 22,461 in 1940 to 41,675 in 1979, an 86 percent increase. Vacant property has been continually developed into higher or more intensive uses. A summary of historic population statistics is shown in Table 1.

TABLE 1

CHICAGO HEIGHTS POPULATION

YEAR	POPULATION	YEAR	POPULATION
1940	22,461	1967	39,200
1950	24,551	1968	39,100
1956	29,000	1969	40,000
1957	30,000	1970	40,900
1958	31,500	1971	40,900
1959	32,300	1972	40,900
1960	34,300	1973	40,902
1961	35,200	1974	40,970
1962	35,800	1975	41,038
1963	37,000	1976	41,253
1964	37,500	1977	41,468
1965	38,000	1978	41,683
1966	38,500	1979	41,675

Historic Water use for the City of Chicago Heights is shown in Table 2.

TABLE 2

HISTORIC ANNUAL AVERAGE DAY WATER USE - MGD

YEAR	PUMPAGE(MGD)	YEAR	PUMPAGE(MGD)
1940	4.20	1967	6.01
1950	NA	1968	5.90
1956	4.33	1969	5.84
1957	4.23	1970	5.73
1958	4.53	1971	5.91
1959	5.43	1972	6.10
1960	6.06	1973	6.57
1961	5.51	1974	6.50
1962	6.01	1975	7.05
1963	6.87	1976	7.07
1964	7.37	1977	7.10
1965	6.60	1978	6.90
1966	6.97	1979	6.76

PRESENT WATER SYSTEM

The Chicago Heights water distribution system consists of watermain sizes ranging from 6" in diameter to 24" in diameter. The older watermains were constructed of cast iron with leaded joints. The newer mains are presently constructed of ductile iron and are provided with rubber gasket type push-on joints.

The City presently receives its water supply from 15 wells ranging in depth from 200 feet below ground to 1897 feet below ground. The well numbers associated with the operational wells range from 15 thru 33. Wells 1 thru 14 are no longer in use. A summary of capacity, depth, type of treatment and location of each operational well is shown in Table 4. The location of each operating well is shown in Exhibit I.

TABLE 4
EXISTING WELLS

WELL #15

Capacity - 1275 GPM
Depth - 428 feet
Type of treatment - Chlorine, Tri-Lux, Acid
Location - 137 East 14th Street

WELL #16

Capacity - 1300 GPM
Depth - 428 feet
Type of treatment - Chlorine, Tri-Lux
Location - 137 East 14th Street

WELL #18

Capacity - 1150 GPM
Depth - 250 feet
Type of treatment - Chlorine, Tri-Lux, Acid
Location - 10th Street and Shilling, East of Ashland Avenue

WELL #21

Capacity - 1000 GPM
Depth - 203 feet
Type of treatment - Chlorine, Tri-Lux, Acid
Location - 10th Street and Shilling on 10th Street

WELL #22

Capacity - 1400 GPM
Depth - 1800 feet
Type of treatment - chlorine, Tri-Lux, Acid
Northeast corner Sixteen Street and Division

WELL #23

Capacity - 1000 GPM
Depth - 260 feet
Type of treatment - Chlorine, Tri-Lux, Acid
Location - 13th Street and Wilson Avenue - on Wilson

WELL #24

Capacity - 500 GPM
Depth - 451 feet
Type of treatment - Chlorine, Tri-Lux, Acid
Location - 22nd and State - on State Street

Note: Wells 1 thru 14 are no longer in use

WELL #25

Capacity - 1500 GPM
Depth - 450 feet
Type of treatment - Chlorine, Tri-Lux, Acid
Location - Northeast corner - 17th and Division

WELL #26

Capacity - 1400 GPM
Depth - 439 feet
Raw water quality analysis - see Table 1-8
Type of treatment - Chlorine, Tri-Lux, Acid
East of Park District Office, on Main Street

WELL #27

Capacity - 500 GPM
Depth - 425 feet
Type of Treatment - Chlorine, Tri-Lux
Location - 14th Street East of Edgewood at creek

WELL #28

Capacity - 500 GPM
Depth - 200 feet
Type of treatment - Chlorine, Tri-Lux, Acid
Location - Northwest corner, Boston and Ashland

WELL #29

Capacity - 1500 GPM
Depth - 436 feet
Type of treatment - Chlorine, Tri-Lux, Acid
Location - EJ&E RR and Southwest corner Euclid Park

WELL #30

Capacity - 900 GPM
Depth - 406 feet
Type of treatment - Chlorine, Tri-Lux
Location - Crescent, East of Ashland

WELL #32

Capacity - 800 GPM
Depth - 1897 feet
Type of Treatment - Chlorine, Tri-Lux
Location - Commissioner's Park, Chicago Road and Vollmer Road

WELL #33

Capacity - 98 GPM
Depth - 450 feet
Type of treatment - Chlorine, Tri-Lux, Acid
Location - Beacon Hill Park, Western Avenue and Michigan Central RR

The City presently has four ground storage reservoirs. Capacity and location of each reservoir is shown in Table 5.

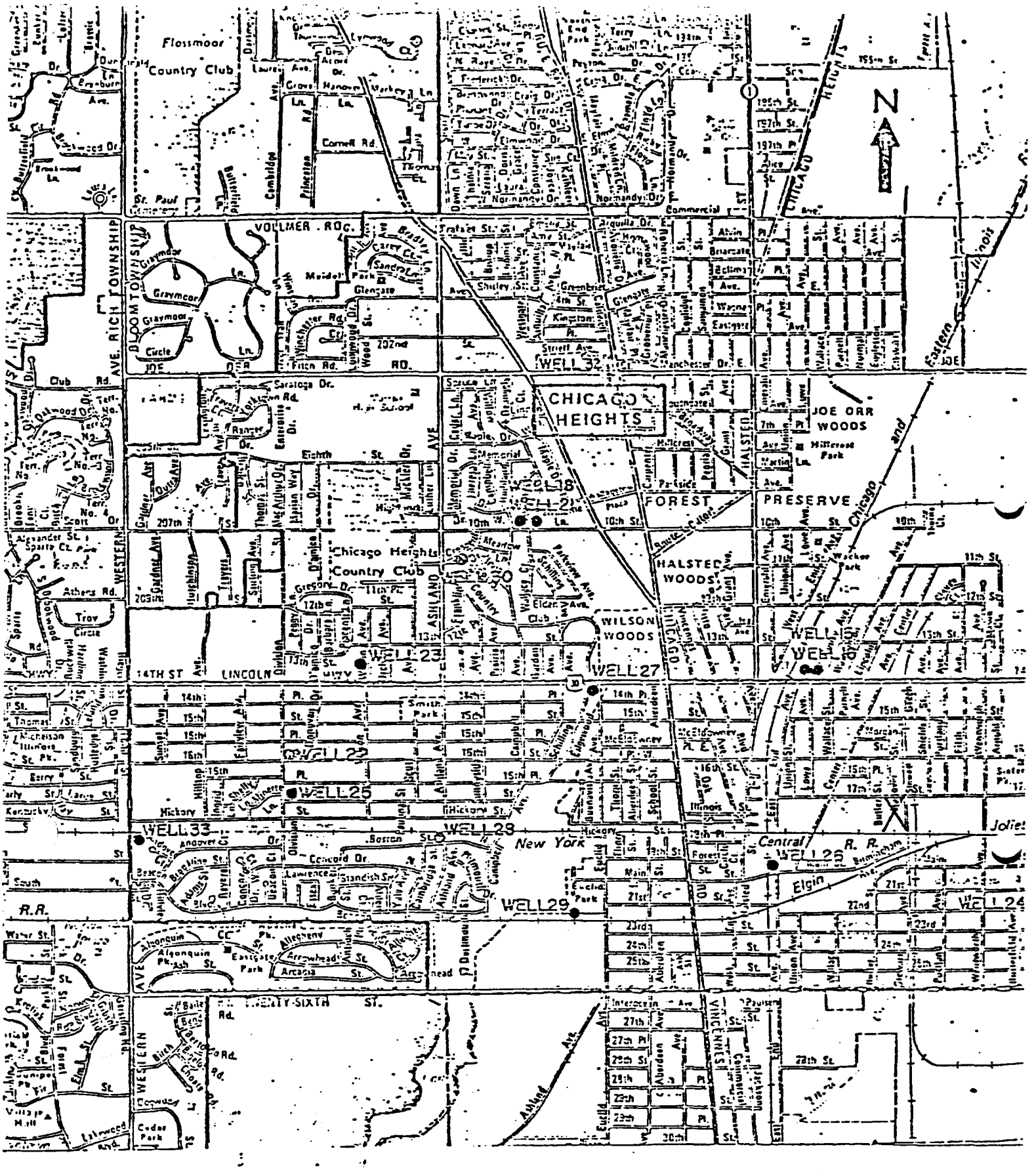
TABLE 5
GROUND STORAGE RESERVOIRS

Capacity	Location
2,000,000 gallons	137 E. 14th St.
180,000 gallons	137 E. 14th St.
2,000,000 gallons	14th & State
2,000,000 gallons	17th & Division

The total ground storage capacity is presently 6,180,000 gallons.

Located at each of the above mentioned sites is an associated pumping station. Water is pumped via wells to the ground storage reservoirs. As demand for water increases during periods of the day, water is drawn from the storage reservoirs to the pumping stations and into the system as needed. A schematic drawing of each pumping station/reservoir(s) combination is shown in Exhibits 2, 3 & 4. The 137 E. 14th St. pumping station is presently the Main Control Station. Also located at this pumping station are various shops, garages and offices.

A 1,000,000 gallon elevated tank is located adjacent to the pump station and ground reservoir at 14th St. & State St. This tank "floats" on the water system, receiving water when the demand (use) is low and discharging water when the demand is high. This is the only municipal elevated tank located in the water system.



WELL LOCATIONS

EXHIBIT 1

REFERENCE 11

SITE NAME Riverdale Chem

SITE ID IDD059446453

SUMMARY

The study of the existing well system in Chicago Heights concluded that expenses on homeowner treatment (water softeners, iron removal equipment, etc.) were a large contributor to the overall costs per 1000 gallons of water. Further, to bring well water up to standards equivalent to that of Lake Michigan water is an expensive proposition.

To bring Lake Michigan water into Chicago Heights requires the installation of a 6-million gallon reservoir and pump station, modifications to the existing pump station's controls, internal watermain reinforcements and extensions, and abandoning of the existing wells. The total cost for the improvements is $4,135,200.

The cost per 1000 gallons of water utilizing wells vs. Lake Michigan water is as follows:

REFERENCE 11
SITE NAME Riverdale Chem
SITE ID IL0059446153